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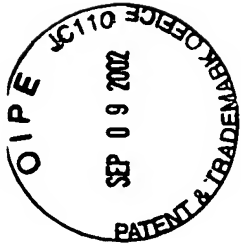
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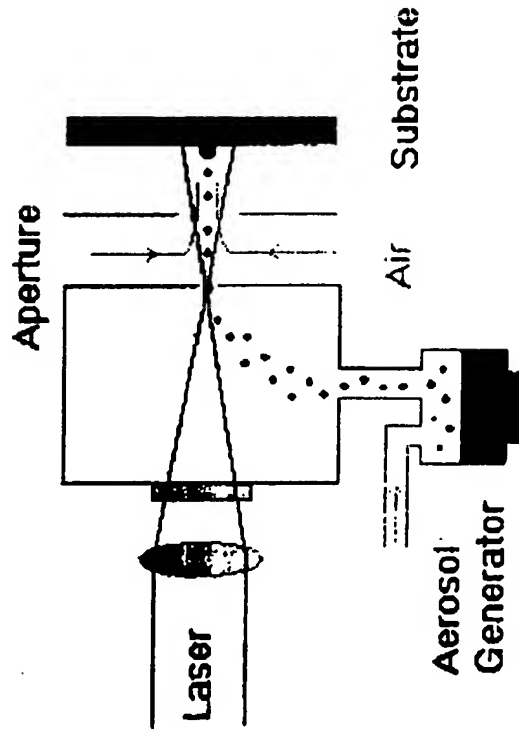
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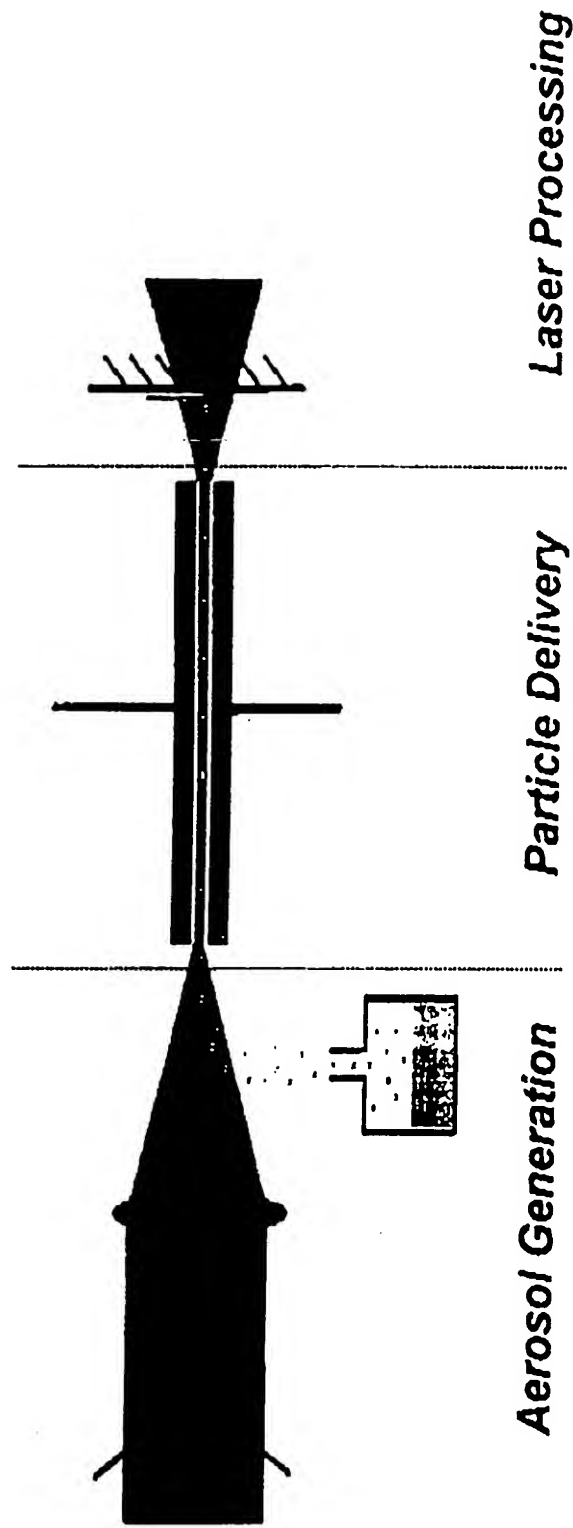
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Features

- High Velocity ($\sim 10\text{m/s}$)
- Variable Beam Diameter ($10\text{ }\mu\text{m}$)
- High Throughput ($\sim 10^9\text{ s}^{-1}$ in $100\text{ }\mu\text{m}$ beam)
- Reduced Clogging
- Long Working Distance ($\sim \text{few cm}$)
- Simultaneous Laser Treatment

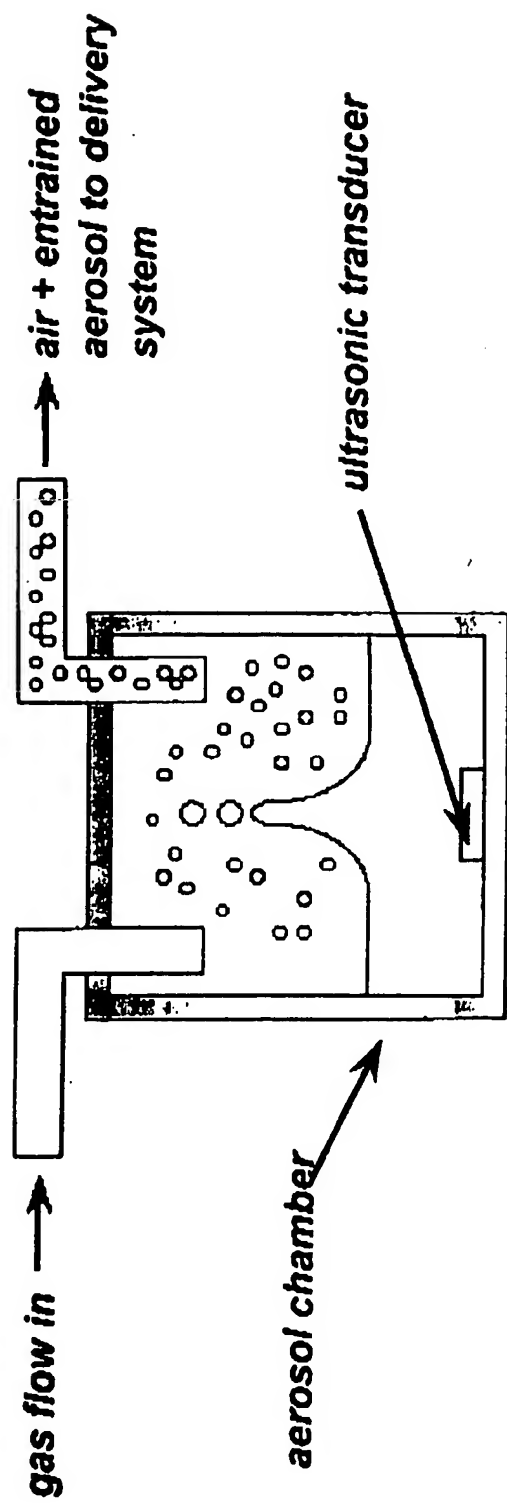
FIG. 1



Features

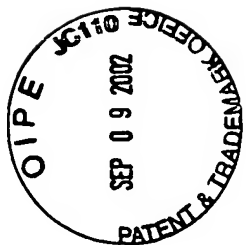
- | Aerosol Generation | Particle Delivery | Laser Processing |
|---|---|--|
| <ul style="list-style-type: none"> • Small droplets ($\sim 1 \mu\text{m}$) • Dense aerosols ($\sim 10^{16} \text{ m}^{-3}$) | <ul style="list-style-type: none"> • Accuracy to $3 \mu\text{m}$ • Single particle to 10^9 particles/s • Throughput to $0.25 \text{ mm}^3/\text{s}$ | <ul style="list-style-type: none"> • Low power ($\sim 50 \text{ mW}$) • High scan rate ($\sim 1 \text{ m/s}$) • Dense, conductive materials ($\rho \sim 2 \times \text{bulk}$) |

FIG. 2



- Small droplets ($\sim 1 \mu\text{m}$, 1 fL)
- Dense aerosols ($\sim 10^{16} \text{ m}^{-3}$)
- 100 μL minimum sample
- All solids, all precursors, or solid/precursor mixtures
- Precursor based alloys with atomic scale mixing
- Organic and biological entities in droplets (enzymes, proteins, virus, etc.)

FIG. 3



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Air Jet

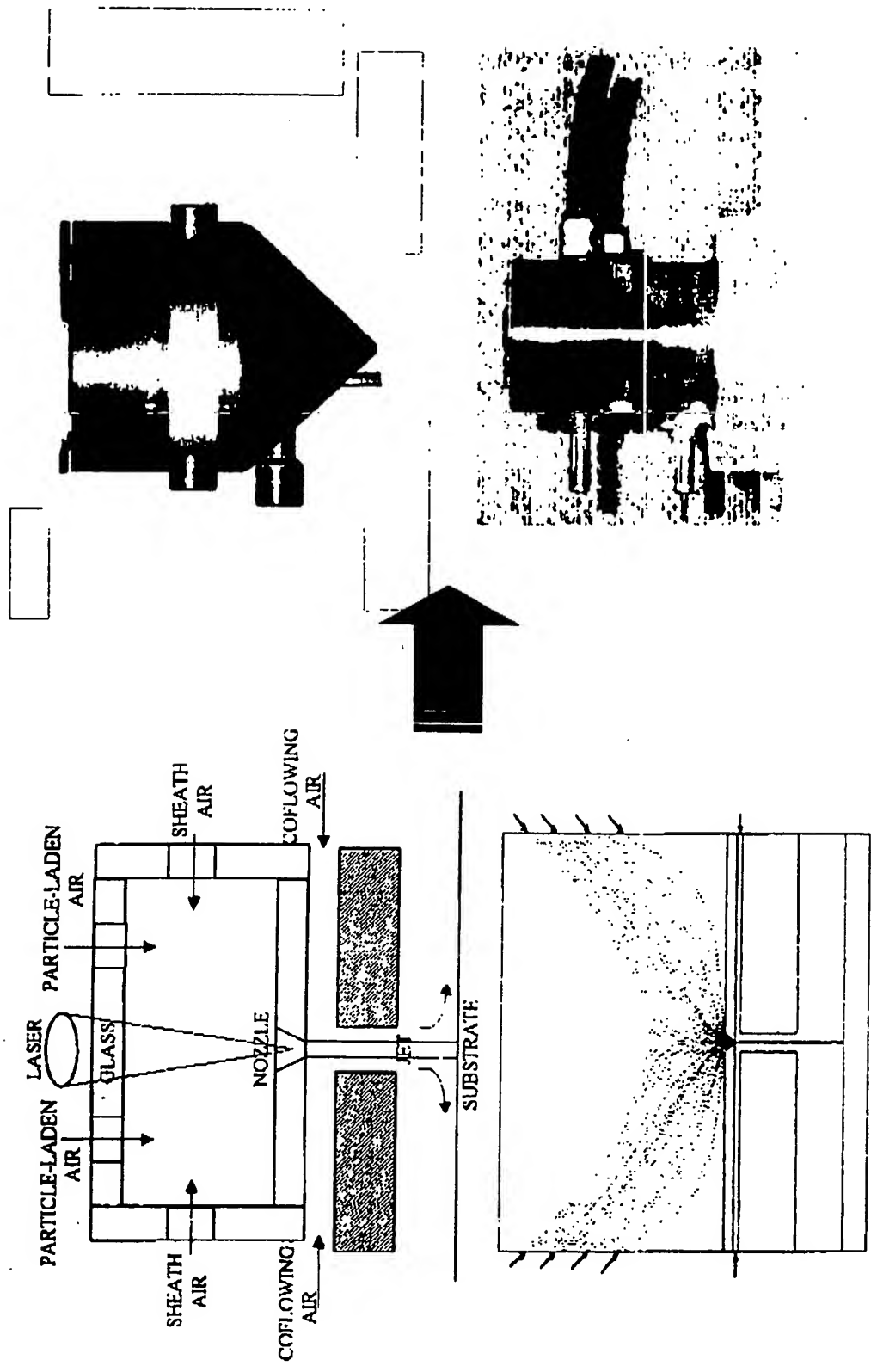
Compressed AirJet

- Large Particles (1-30 μm)
- High Viscosity Fluids
- Particles + Precursor binder
- Animal Cells + Media
- Bacteria
- Virus

Particulate in Suspension

FIG. 4

FIG. 5



Cascade Impaction

Gas stream carrying
various size particles

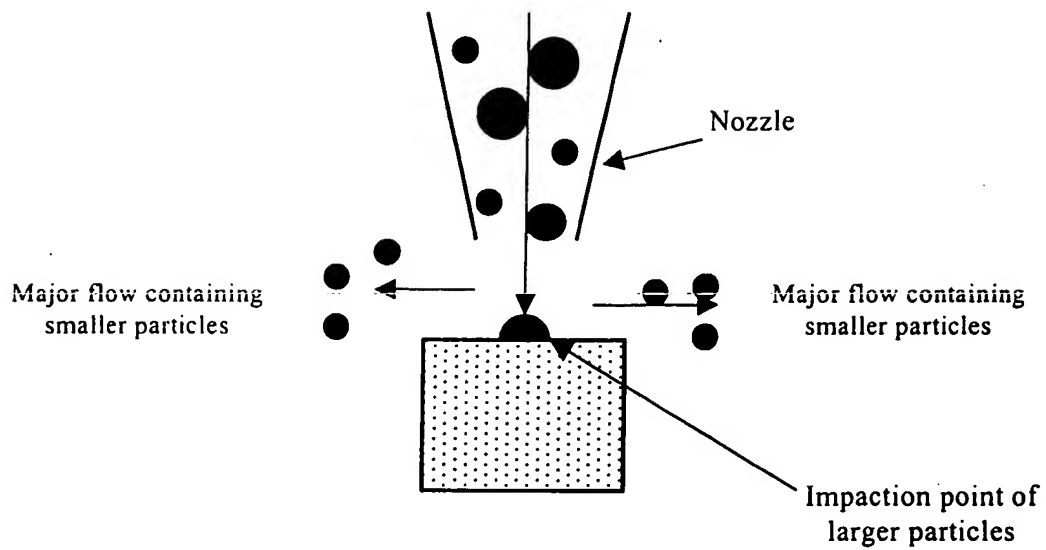


FIG. 6

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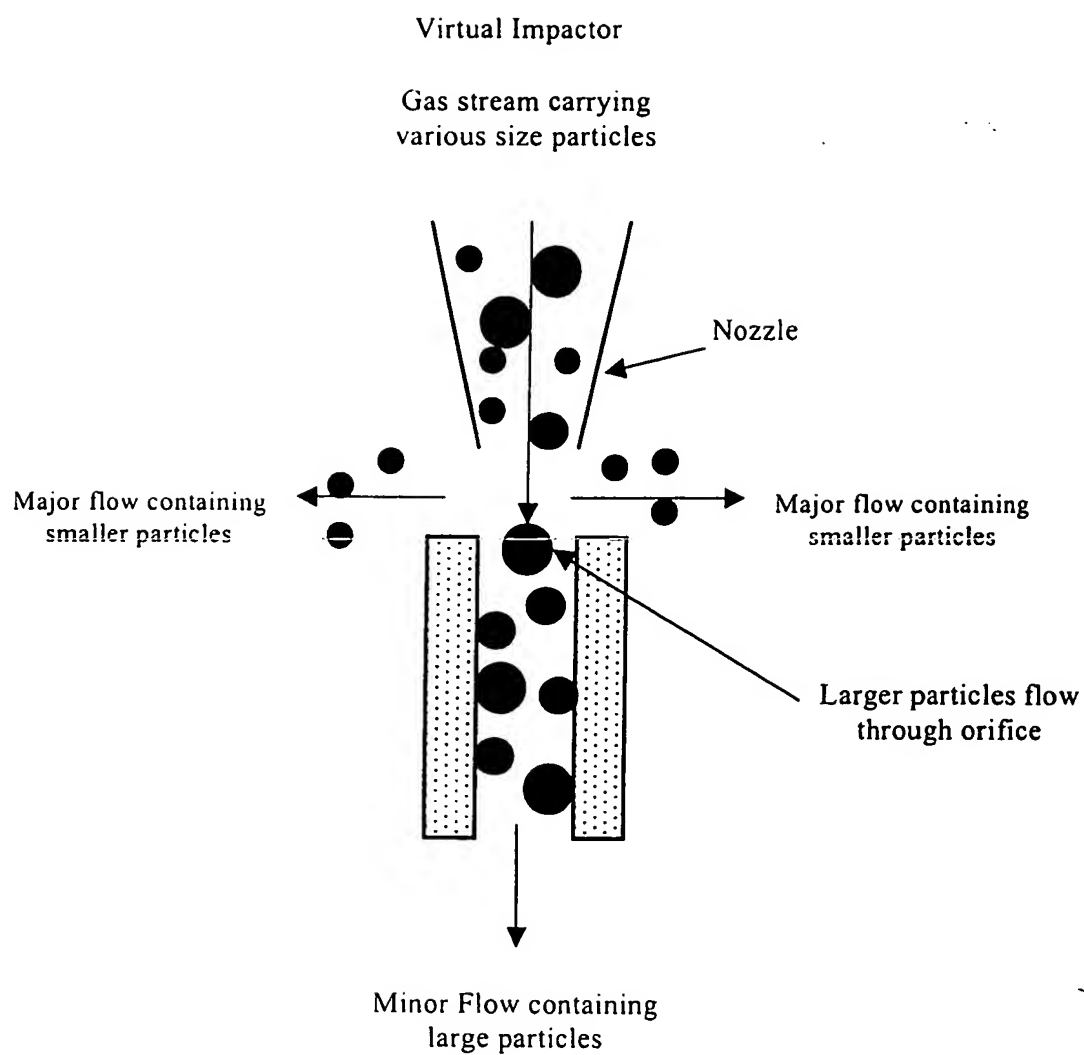


FIG. 7

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Virtual Impactors in Series

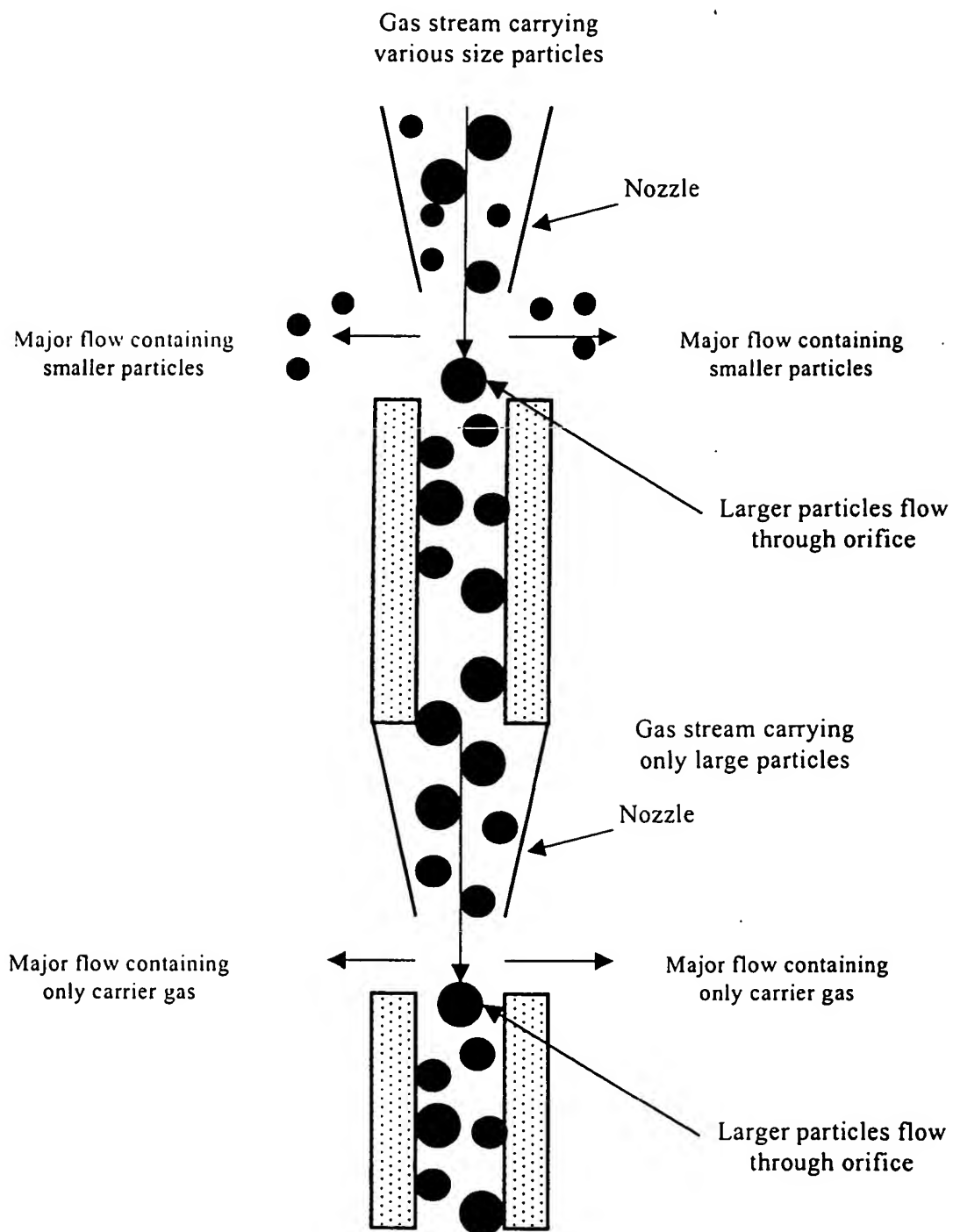
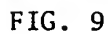
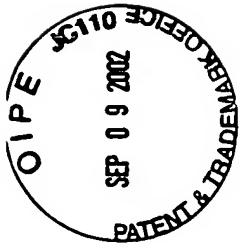


FIG. 8

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Gas stream carrying only large particles from the atomizing unit





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Flow Guidance Delivery System

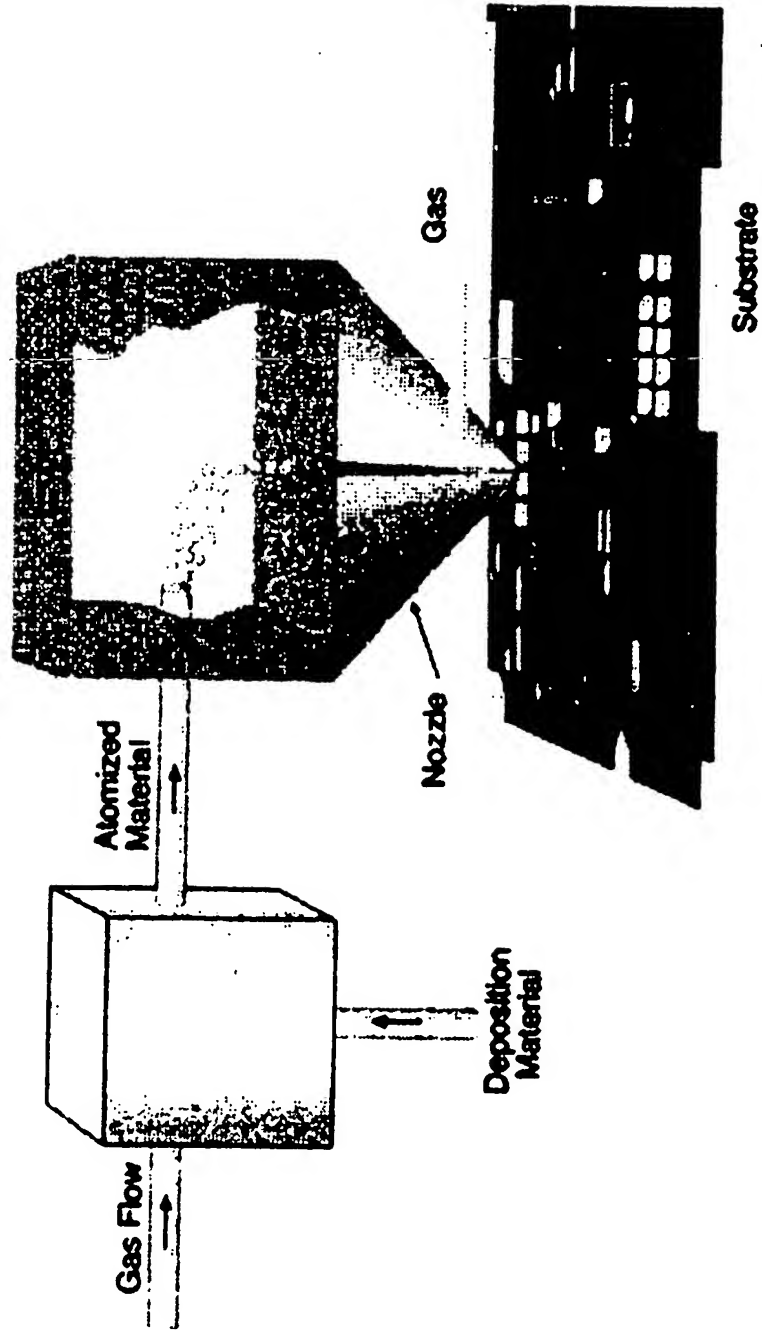


FIG. 10

Aerosol Stream

Sheath Gas

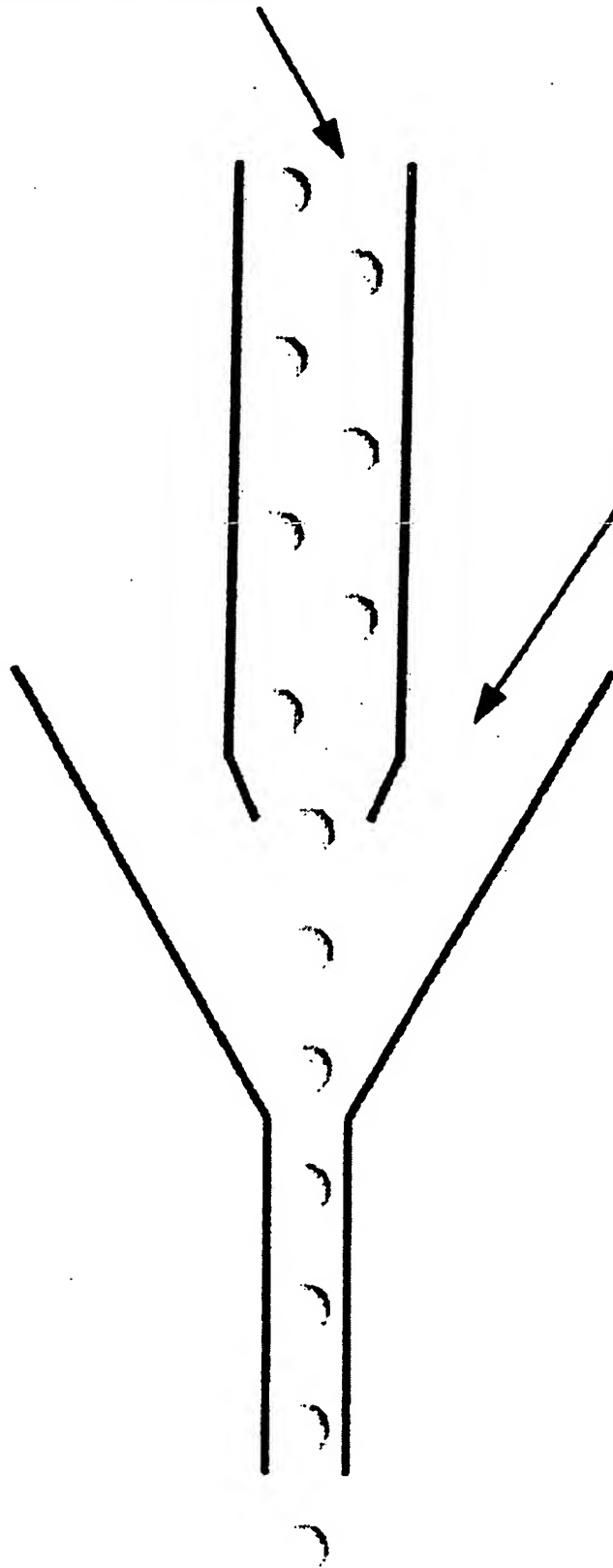
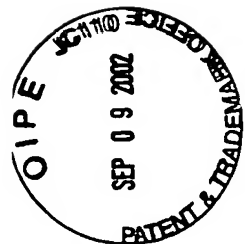


FIG. 11

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FIG. 12

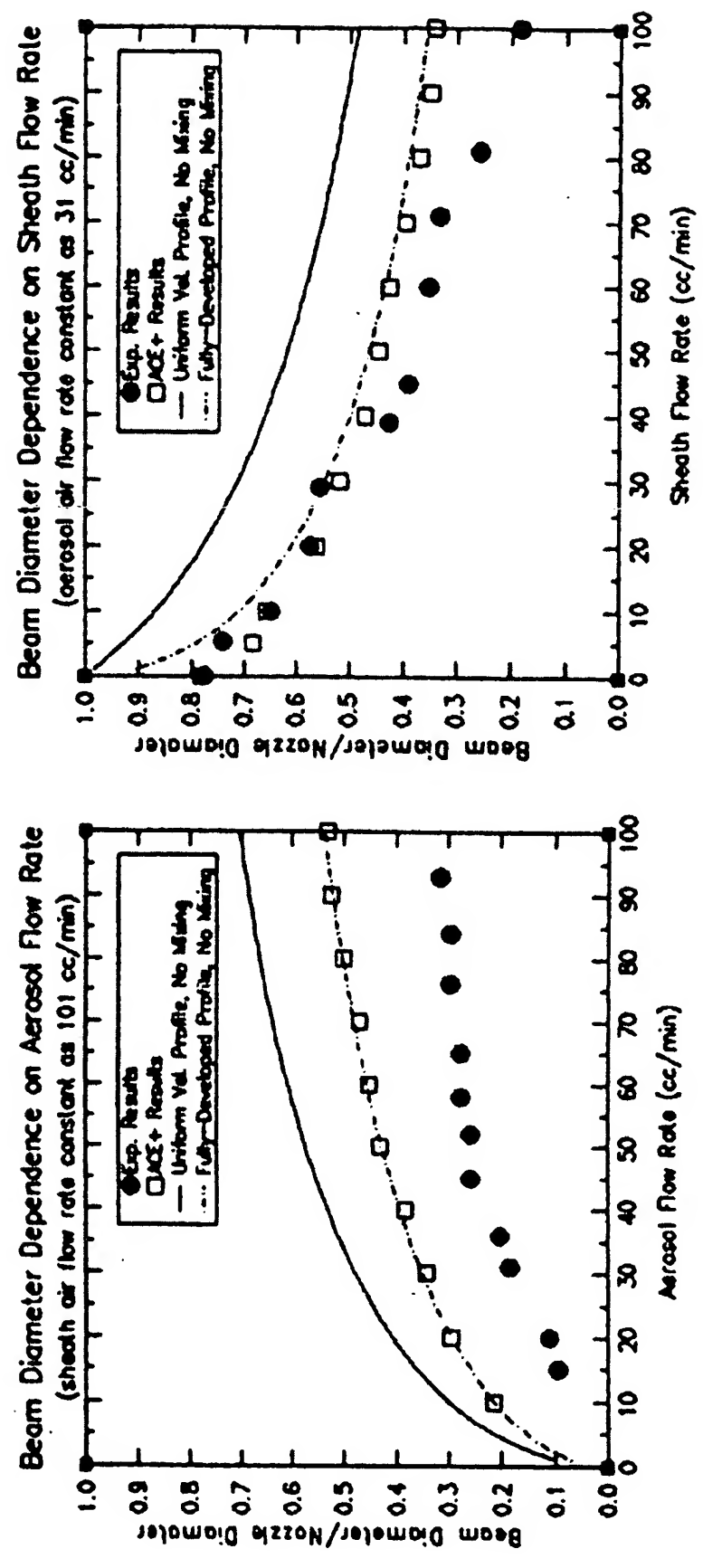
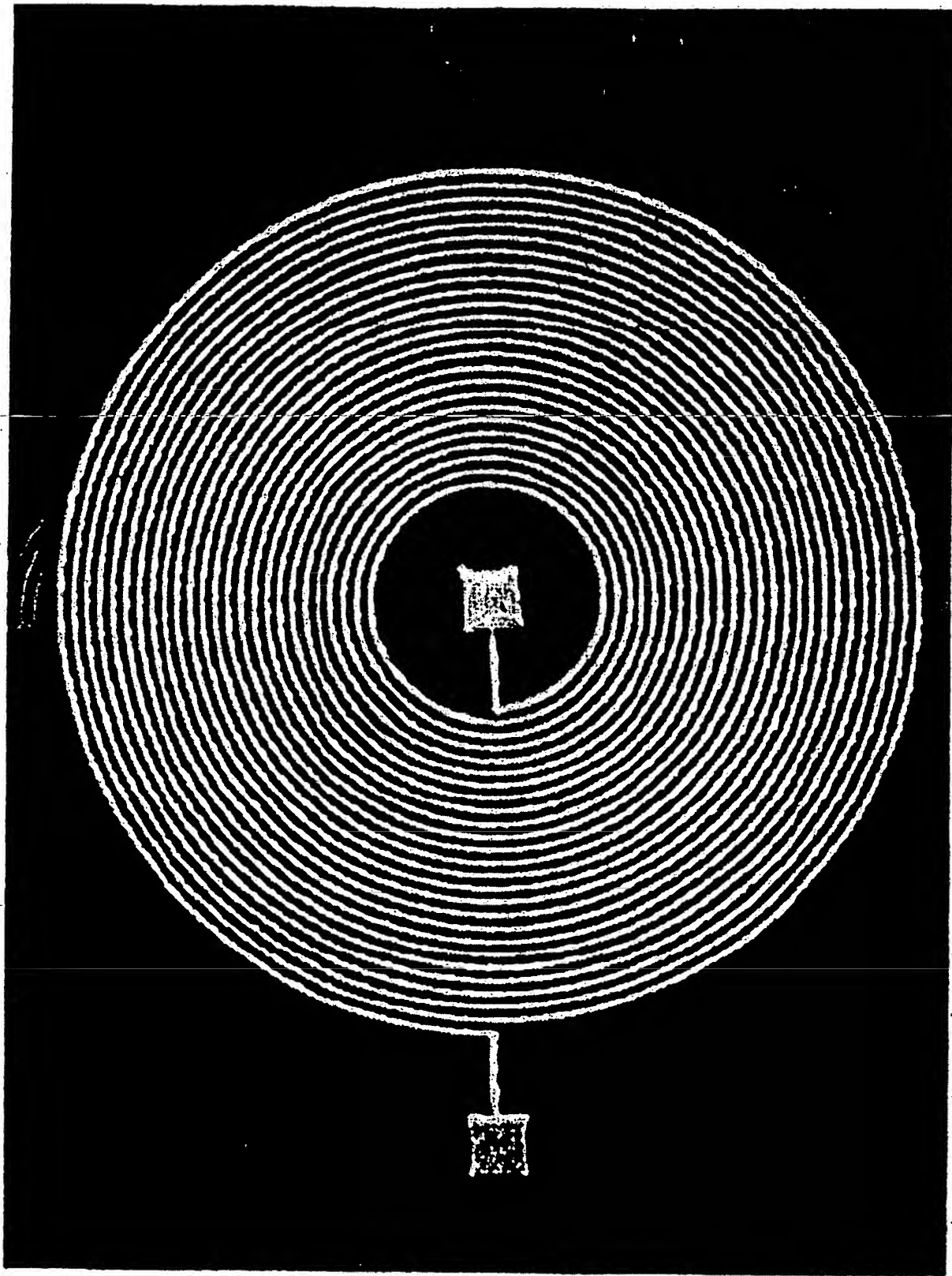


FIG. 13

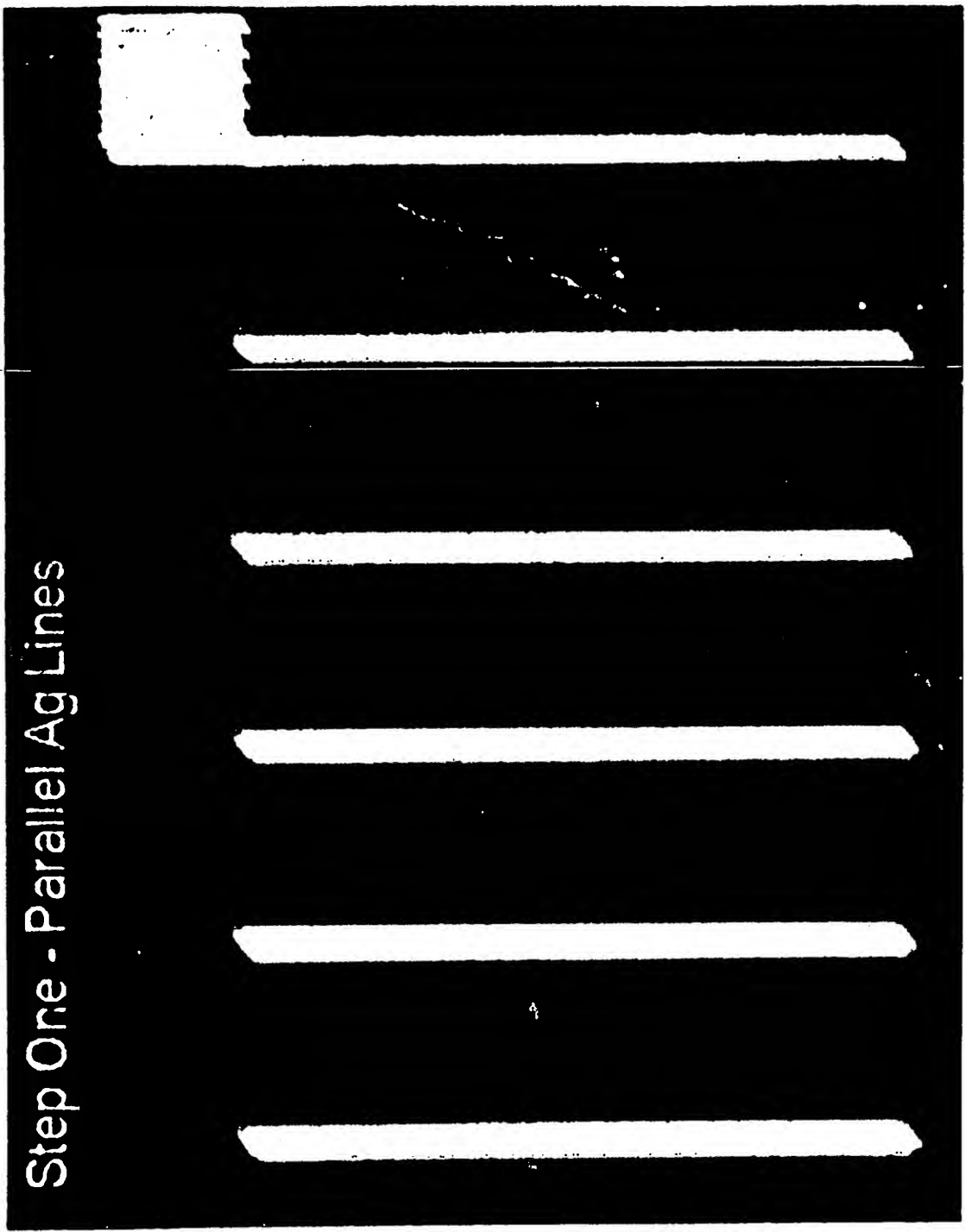


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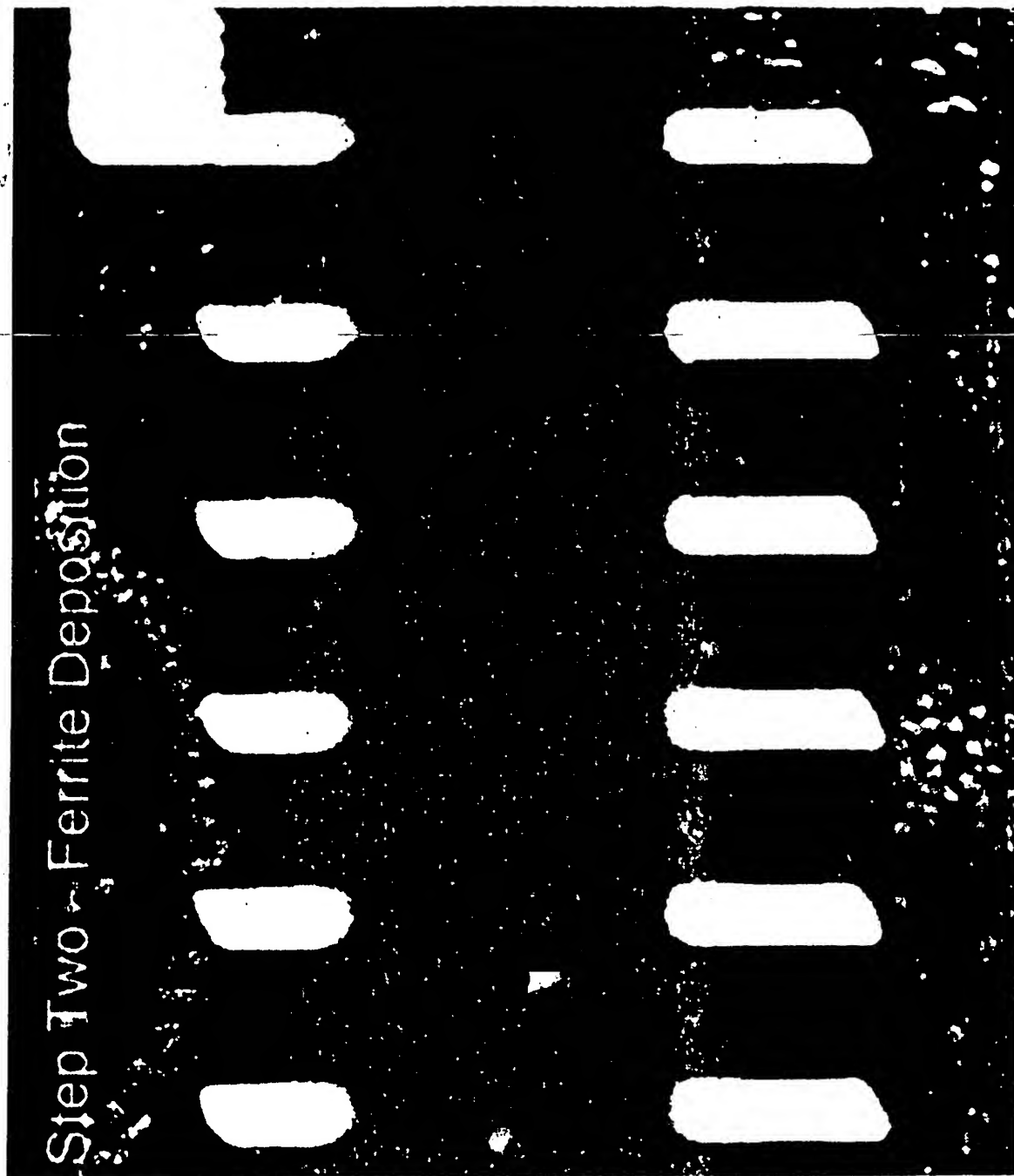
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FIG. 14



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FIG. 15



Step Two - Ferrite Deposition



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FIG. 16

Step Three - Connecting Ag Lines



FIG. 17

